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United States Patent [19] Rozman

[11] Patent Number: **5,528,482**
[45] Date of Patent: ***Jun. 18, 1996**

[54] **LOW LOSS SYNCHRONOUS RECTIFIER
FOR APPLICATION TO CLAMPED-MODE
POWER CONVERTERS**

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[73] Assignee: **AT&T Corp.**, Murray Hill, N.J.

[*] Notice: The term of this patent shall not extend beyond the expiration date of Pat. No. 5,303,138.

[21] Appl. No.: **225,027**

[22] Filed: **Apr. 8, 1994**

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 54,918, Apr. 29, 1993, Pat. No. 5,303,138.

[51] Int. Cl.⁶ **H02M 7/217**

[52] U.S. Cl. **363/21; 363/20; 363/89; 327/309**

[58] Field of Search **363/20, 21, 89, 363/97, 126, 127**

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[57]

ABSTRACT

A synchronous rectifier for use with a clamped-mode power converter uses in one embodiment a hybrid rectifier with a MOSFET rectifying device active in one first cyclic interval of the conduction/nonconduction sequence of the power switch and a second rectifying device embodied in one illustrative embodiment as a low voltage bipolar diode rectifying device active during an alternative interval to the first conduction/nonconduction interval. The gate drive to the MOSFET device is continuous at a constant level for substantially all of the second interval which enhances efficiency of the rectifier. The bipolar rectifier device may also be embodied as a MOSFET device. The subject rectifier may be used in both forward and flyback power converters.

10 Claims, 4 Drawing Sheets

